Also, the predetermined time period can include a time period in the range of 10 seconds to 10 minutes (**434**). The predetermined time period to incubate the sample liquid with the indicator material can depend on the characteristics of the analytes present in the sample liquid.

A second test strip, which is physically separate from the first test strip, is put in contact with the first test strip (**440**). When the two test strips come into contact with one another, capillary flow resumes across the two test strips. The second test strip can include a binding area to immobilize a binder material configured to bind with the at least one type of indicator material, at least one analyte, or both the at least one analyte and the at least one type of indicator material. As described with respect to FIGS. **1**A-**1**K, more than one binding area can be included with the second test strip.

A presence of at least one target analyte can be detected based on a location of the at least one type of indicator material, the analyte-indicator complex, or both the at last one type of indicator material and the analyte-indicator complex on the second test strip (**450**). For example, the presence of the visually detectably indicator material at the binding site can indicate that the sample liquid does not include a target analytes. Conversely, the presence of the visually detectable indicator material at the binding site can be used to indicate that a target analyte is present in the sample liquid. The use of the visual indicator can depend of the types of the indicator material, the types of the binder material, the types of the analyte or a combination therein.

FIG. **5** shows an example process for using a capillary flow assay device or system to test a sample liquid. A sample collector unit (e.g., sample collector unit **200**) can be used to obtain a sample liquid (**510**). The obtained sample can be transferred into a sample inlet of a sample testing and housing unit (**520**). The obtained sample liquid can be contacted with a single test strip that includes an indicator holding area to temporarily hold at least one type of indicator material that binds with a corresponding analyte present in the sample liquid and form an analyte-indicator complex that flows across the single test strip under capillary action (**530**). The capillary action continues across the single test strip to a binding area that immobilizes a binder material configured to bind with the at least one type of indicator material, at least one analyte, or both the at least one analyte and the at least one type of indicator material. As described with respect to FIGS. **1**A-**1**J, more than one binding area can be included with the second test strip. A presence of at least one target analyte can be detected based on a location of the at least one type of indicator material, the analyte-indicator complex, or both the at last one type of indicator material and the analyte-indicator complex on the same single test strip (**540**). For example, the presence of the visually detectably indicator material at the binding site can indicate that the sample liquid does not include a target analytes. Conversely, the presence of the visually detectable indicator material at the binding site can be used to indicate that a target analyte is present in the sample liquid. The use of the visual indicator can depend of the types of the indicator material, the types of the binder material, the types of the analyte or a combination therein.

The discontinuous (e.g., multiple piece test strip) and continuous (e.g., a single piece test strip) capillary flow assay devices described herein can be implemented to receive different test strips to test for various target analytes. The different test strips can be placed into the devices and removed one at a time, for example. Also, test strips that include different tracer materials can be used to test for multiple analytes at once. Additionally, several test strips can be placed together into the sample well to test for multiple analytes at once. The discontinuous capillary flow assay devices described herein can be used to test various liquid samples, such as saliva, urine or blood for drugs for example. In addition, dry samples can be placed in a solution and tested.

While this specification contains many specifics, these should not be construed as limitations on the scope of any invention or of what may be claimed, but rather as descriptions of features that may be specific to particular embodiments of particular inventions. Certain features that are described in this specification in the context of separate embodiments can also be implemented in combination in a single embodiment. Conversely, various features that are described in the context of a single embodiment can also be implemented in multiple embodiments separately or in any suitable subcombination. Moreover, although features may be described above as acting in certain combinations and even initially claimed as such, one or more features from a claimed combination can in some cases be excised from the combination, and the claimed combination may be directed to a subcombination or variation of a subcombination.

Similarly, while operations are depicted in the drawings in a particular order, this should not be understood as requiring that such operations be performed in the particular order shown or in sequential order, or that all illustrated operations be performed, to achieve desirable results. In certain circumstances, the separation of various system components in the embodiments described above should not be understood as requiring such separation in all embodiments.

Only a few implementations and examples are described and other implementations, enhancements and variations can be made based on what is described and illustrated in this application.

What is claimed is:

1. A system for performing lateral capillary flow assay, comprising:

a sample collection unit to collect a sample liquid; and

a sample testing and storing unit to interface with the sample collection unit to test and store the collected sample liquid, the sample testing and storing unit comprising:

a sample well to retain at least a portion of the sample liquid,

a sample inlet positioned above the sample well and shaped to receive the collected sample liquid from the sample collection unit,

a sample housing unit to store a remainder of the sample liquid not retained in the sample well, and

an analyte testing unit housing shaped to receive an analyte testing unit to test a presence of a target analyte in the sample liquid, wherein the analyte testing unit housing comprises

an analyte testing unit inlet positioned above the sample well to allow a first test strip to drop towards the sample well by gravity and into physical contact with the sample liquid in the sample well,

a second test strip, physically separate from the first test strip, positioned within the sample well, the second test strip including a sample receiving area to receive the sample liquid,

the second test strip comprising:

an indicator holding area comprising at least one type of indicator material that binds with the target analyte in the sample liquid to form an analyte-indicator complex that flows across the analyte testing unit under capillary action, and the first test strip comprising:

at least one binding area comprising at least one type of binder material configured to bind with the at least